Organizing professional communities of practice
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1 Introduction

This dissertation focuses on how organizational change and development can be stimulated through employee learning in communities of practice. It is about helping polytechnics to become learning organizations - organizations that are able to change relatively easily according to signals from the environment, and as a result are more competitive – by stimulating teachers’ learning.

The research presented here is a direct product of my own sense-making process as a lecturer in a large polytechnic undergoing complex changes. For that reason I am concerned with how, in a radically changing school ecology, teachers can learn and adapt their current teaching practices as well as gain new competences crucial for working in a changing organization. Organizing communities of practice is one approach to doing this. In the private sector, communities of practice have for some years been recognized as an effective knowledge management method for stimulating organizational learning by inspiring learning and innovation among its employees (Fox, 2000; Hakkarainen, Paavola, & Lipponen, 2004; Hinds & Pfeffer, 2003). Communities of practice are organized in the private sector in order to improve firm competitiveness in the market place through investment in learning at the individual level (Davenport & Prusak, 1998). Communities of practice are defined as “...groups of people who share a common set of problems, or a passion about a topic, and deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott, & Snyder, 2002).

Originally developed as a new perspective on how people learn through participation in social collectives, the concept of communities of practice (CoPs from now on) has undergone several major developments since Lave and Wenger (1991) first used the term in their study of five learning groups. The most recent development points towards the role CoPs can play in organizational development (Muthusamy & Palanisamy, 2004; Wenger et al., 2002) by stimulating and facilitating organizational learning.
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Learning is often considered a major contributor to the success or failure of an organization (Muthusamy & Palanisamy, 2004). Through learning, organizations develop new and possibly rare competences that enables them to gain or sustain competitive advantage over rival organizations (Casey, 2005; Lines & Johansen, 2004). Organizational learning can be defined as a “...process in which information, deemed important by the collective, is disseminated by and throughout the collective” (Confessor & Kops, 1998, p. 366). Besides a process, organizational learning is also seen as a result, such as a change in strategy or new product development (Bapuji & Crossan, 2004). In other words, organizational learning is a means to an end as well as an end in itself.

Most of the literature on organizational learning points to the individual as the starting point in the learning process (Crossen, Lane, & White, 1999; Lehesvirta, 2004; Nonaka & Takeuchi, 1995; Stahl, 2000). Probably as a result of this, there are many examples of organizational development strategies based on improving the learning of individuals (Harrison & Kessels, 2004). This focus on individual learning is also emphasized in the human resource development literature, where the underlying idea is that an improvement of the individual necessarily leads to an improvement in organizational capability (Harrison & Kessels, 2004; Watkins & Marsick, 1993). An example of this approach in practice would be some type of a management training or leadership development program. However, the literature points out several problems associated with organizational development programs focusing solely on the individual.

One problem has to do with a possible lack of connection between individual learning and organizational learning (Huysman & de Wit, 2003). This may have to do with the fact that researchers, when studying the subject, have used either an individual level learning theory, or an organizational one (Casey, 2005; Lines & Johansen, 2004). It could also be connected to the fact that organizational learning is often seen as an epi-phenomenon of individual learning (Elkjaer, 2001); the idea here is that by helping the individual learn you automatically help the organization to learn as well. However, contrary to what one reads in the prescriptive literature, organizational learning has not been inevitably linked to individual learning. In fact, much of the literature points to the importance of organizational groups such as CoPs in which individuals function, that make this link (Kulkarni, Stough, & Haynes, 2000; Mulholland, Zdrahal, Dominique, & Hatala, 2001).
Another problem considers training effectiveness. Training programs are traditionally designed on the basis of a competence gap analysis and focus on the knowledge aspect of learning, rather than the practice aspect (Brown & Duguid, 1991). Research shows that this type of training program usually results in little or no transfer from the training environment to the work environment. Rather, it ends more typically with employee frustration, not effective organizational development (Casey, 2005; Mulholland et al., 2001).

Problems with organizational development strategies such as those sketched above might be mitigated if learning in organizations was approached from a community of practice (CoP) perspective. CoPs fit with Boonstra’s (2004) idea of organizational development (compared to planned change) as continual change and reality construction, where “...organizing, changing and learning are seen as interactive processes in which people construct their relations, their activities and their meanings...” (p. 3).

The idea of CoPs is rather recent and the perspective much of the literature takes on the topic has undergone several changes. The greatest change is changes from describing a process - how an individual learns in a CoP - to prescription - how CoPs can be stimulated in order to contribute to organizational capability (Ropes, in press). However, the idea that a CoP is a powerful environment for participant learning remains unchanged throughout the literature. While learning is often understood as process based on individual cognition, learning in communities of practice is seen as a social collaborative process situated within specific contexts (Wenger, 1998). Also, learning in a CoP is self-directed and linked directly to organizational practices, which are two important characteristics for effective adult learning environments (Billet, 1999; Johnson & Johnson, 1975; Knowles, 1978; Terehoff, 2002) and crucial for developing a learning organization (Watkins & Marsick, 1993), which is a major aspect of this research.

The rest of this chapter is structured as follows; first I expand on the context in which the research takes place. This is directly linked to the purpose of the research, which is manifested in the problem statement and the research questions. Next I give a brief introduction into the methodology I use to answer the research questions. I then discuss the practical and scientific relevance of the research itself and conclude by describing the actual structure of the dissertation.
1.1 Context

In this section I look at the specific problem from which the research comes from and the context in which it takes place. When I first started this research my idea was to only look at polytechnic teachers and learning in the context of CoPs. However, this was expanded to include other professions as well - specifically management consultants - which I could use as a comparison.

The field of higher professional education in the Netherlands is undergoing complex structural changes at a rapid pace. For example, mergers between polytechnics have reduced their number from more than 400 in 1985 to 56 in 2000 to 41 in 2007 (Ministry of Education, 2008). The national association for polytechnics (called the HBO Raad in Dutch) estimates that the field will level itself at about 40. Furthermore, polytechnics are starting to merge with research universities in an attempt to gain access to new funding as well as develop and reach new markets.

Changes in the role higher professional education is expected to play in society are also occurring. For example, in one report from the national association of polytechnics (HBO Raad), polytechnics are no longer small, local schools concerned with teaching students a vocation, but have changed to regional knowledge centers and knowledge-intensive, service-based businesses. These knowledge centers are “...focused on development of up-to-date competences in the service of life-long learning, the improvement of education, professionalization of employees, and new knowledge development with the private sector” (van Bemmel, 2003).

And while student numbers have been steadily increasing (from 220,000 in 1985 to 374,000 in 2007 according to the Ministry of Education), budgets have not. In fact, government financing has decreased slightly as polytechnics are expected to become more efficient, more competitive and generate other types of income. The

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1 Higher vocational education in the Netherlands is referred to as Hoger Beroeps Onderwijs (HBO) and take place in polytechnic institutions. In the Netherlands, polytechnic institutions are called Universities of Applied Sciences. In this dissertation I use the term ‘polytechnic’.
combined factors of scale enlargement, changing societal role and decreased financial certainty are forcing polytechnics to develop new strategies in order to remain viable.

As a member of faculty in a polytechnic in the Netherlands, I work in an environment that is rapidly and continually changing. I briefly outlined a few of these changes above but in reality they are much more complex, affecting not only the organizational structure of polytechnics but the whole pedagogic framework as well. The model given in Figure 1.1 illustrates these changes. During the course of my research, I regularly presented this model to colleagues and management at my own and other polytechnics as well as at national and international conferences on teaching in higher education. Most audiences recognize it as describing a general trend in higher education. (See, for example, Smeenk, 2007.)

![Figure 1.1. Changes in Dutch higher vocational education (Ropes, 2005)](image)

The model represents two types of simultaneous change; from A (the current situation) to A’ (the desired situation). Shown between A and A’ are the processes that polytechnics are going through in order to change. The top part of the model shows changes in the educational framework. These changes are originally pedagogical in nature, which leads to a change in the didactical approach and curricula (Beishuizen, 2004). In general, the pedagogic approach of polytechnics is changing from knowledge-based to competence-based. The didactical approach is also changing, from one based on an acquisition metaphor (Sfard, 1998), where teachers transfer their knowledge to the students, to a more participative one in which knowledge is socially constructed during projects. In other words, the days of the teacher standing at the front of a lecture hall relating his or her particular expertise and knowledge to a group of busily-scribbling students is giving way to the teacher as coach, as mentor and as educational process guide. Students have
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become more and more responsible for gaining the knowledge they need in order to collaboratively solve problems posed in the curricula. Exams are no longer the primary instrument a teacher uses to judge a student’s learning. Instead, extensive assessments are employed; structured reflections on competences gained during the project-based educational experience, as expressed through beroepsauthentieke producten (which translates as ‘simulated authentic professional products’). These changes in the pedagogical framework, as manifested in competence-based learning, distance learning, blended learning, e-portfolios, communities of learners, etc. are forcing a fundamental transformation in how teachers in polytechnics are expected to teach (Beishuizen, 2004).

Finally, changes in the actual curricula are a common phenomenon. Polytechnics have traditionally been strongly linked to external (commercial and public sector) organizations that have varying degrees of influence on what is to be taught in order to prepare students for the ‘real world’. In fact, most courses at polytechnics have some type of external board that verifies curricula content as being pertinent to the field and regularly gives advice on curricula development to the school, leading to regular changes in curricula. Teaching is in general a complex task that takes place in a changing environment (ten Dam, van Hout, Terlow, & Willems, 2000), but now things have become even more complex and the environment even more dynamic.

The lower part of the model shows another type of change more associated with the organization itself. The factors introduced in the beginning of this introduction – mergers, financial uncertainty and a changing societal role - are leading polytechnics to take on more and more organizational traits normally found in the commercial sector (Ropes, 2005; Smeenk, 2007) and are trying to be competitive by contributing to the knowledge society in ways other than delivering educated youngsters to society (HBO Raad, 2003).

Complex changes are difficult for most organizations and polytechnics are no different. In order to cope, polytechnics are adopting management tools and techniques, new organizational forms and new technologies generally associated with the private sector (Smeenk, 2007). In fact, most institutions now employ “...greater managerial power, structural reorganization, more emphasis on marketing and business generation, moves toward performance-related pay and a rationalization and computerization of administrative structures” (Parker and Jary, in
Smeenk 2007, p.4). Large-scale mergers and centralization of primary processes – such as curricula development – have also taken much control away from the individual teacher. These types of change within the organization have serious consequences for the teaching profession. Lecturers are now seen more as human resources that can be used to meet the goals of the institution, rather than solely as teachers working with students in the educational process. In order to generate new business, polytechnics regularly offer contract education for the private sector. Also, applied research centers (lectoraten in Dutch) have been founded in order to link small and medium enterprises with the school through contract research. However research, of any kind, has never been a part of the core activities of polytechnics. These new activities, developed alongside more traditional educational practices, are just a few examples of new activities faculty is expected to take part in and serve to illustrate changes in the profession. These changes combined place strong demands on the teaching staff. New competences, more professionalism and stronger links to organizational goals are required of faculty members, which in the past has only been responsible for achieving goals more typically associated with teaching.

This research is grounded in a problem arising from complex change in the teaching ecology of polytechnics, namely that multidimensional and complex change demands constant learning by faculty. But complex change and the need to learn are common to most organizations, only the driving forces behind the need might differ. In the Netherlands there is a general tendency towards professionalizing organizations in order to improve competitiveness in the private sector and effectiveness in the public sector.

In my work as a researcher for the Centre for Research in Intellectual Capital I came across many organizations experiencing problems similar to those in polytechnics. Most of these organizations were, like polytechnics, knowledge-intensive and service-based. Managers in all of these organizations recognized the need for organizational development and they saw organizing CoPs as a possibly effective way of helping the process. I took advantage of my position and connections to gain entry into the organizations presented in the case studies.
1.2 Goals

There are two goals to this research. The first is a practical goal that solves a field problem associated with organizational development. This field problem arises from the complex changes that polytechnic universities are undergoing here in the Netherlands. As I discussed above, due to changes in government financing structures, polytechnics are starting to be managed much more like private sector organizations in order to gain competitive advantage. Managers of polytechnics are being forced to look for new ways of ensuring that faculty members are effectively facilitated in their learning in order to cope with the changes as well as innovate. However, as one study showed, teachers in polytechnics experience drastically increased workloads and are focusing more and more on the primary process of teaching (Miedema & Stam, 2008). This makes workplace learning – either formalized or more informal - problematic. Maybe organizing CoPs can help.

The second goal is scientific in nature; I hope to contribute to CoP theory by developing knowledge and understanding about CoPs as human resource development trajectories.

Practical goal

The practical goal of this research is to come to a tested set of design principles that will help management in polytechnics organize CoPs as human resource development trajectories enabling faculty professionalization. This is also called the design problem (Andriessen, 2004) because it considers the design and testing of a method for organizing CoPs. The design problem considers trying to help polytechnics to change and develop through employee learning. In order to deal successfully with the complex changes facing them, polytechnics will need to follow other organizations in their path to becoming learning organizations. Polytechnics, like other educational institutions, are now recognizing organizational learning may play an important role in facilitating change and stimulating innovation (Karsten, Voncken, & Voorthuis, 2000) and CoPs as forums for professional learning are starting to be formed in polytechnics as one result of this.²

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² Consider, for example, the extensive funding by the former Digital University of numerous projects surrounding CoPs.
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Scientific goal
The second goal of this research concerns developing new knowledge around CoPs in order to help solve the design problem. Understanding how CoPs can be effectively developed is important because as I discussed above, they have been shown to play a role in facilitating organizational development (Bood & Coenders, 2004; Hakkarainen, Paavlova et al., 2004; Laathlean & Lemay, 2002; Saint-Onge & Wallace, 2003; Wenger, 1998; Wenger et al., 2002). We know that CoPs can and do emerge spontaneously in organizations. We also know that they can be ‘artificially’ stimulated in their organization as a way to create, share and store organizational knowledge (Eales, 2003). Stimulating CoPs is done through performing certain interventions in order to facilitate the development of the community and its internal social processes. However, the literature falls short in two respects. First, there has not been a solid theoretical grounding of the interventions typically mentioned in CoP literature, nor are the interventions based on solid case evidence. Second, there is a lack of empirical work on the effects of CoPs on individuals, groups or the organization in which they function. Most impact studies are anecdotal in nature and focus on trying to prove user value. Much like other human resource development initiatives, there has been little attempt at showing impact through solid empirical research (Spitzer, 2005; G. Wang, Dou, & Li, 2002). This research attempts to do this.

1.3 Research Questions
The main objective of this research is to help polytechnics to become learning organizations through stimulating employee learning. CoPs are one way that this might be done. This objective, combined with the design problem given above leads me to the following main research question:

How can communities of practice be designed and implemented as forums for employee learning in knowledge-intensive, service-based organizations such as polytechnics?

The answer to this question is a combined result of the literature reviews and the empirical testing, and comes in the form of a set of tested design principles for CoPs. Design principles, or what are sometimes called design propositions “...can be seen as offering a general template for the creation of solutions for a particular class of field problems” (Denyer, Tranfield, & van Aken, 2008, p. 395).
In order to help answer the main research question, I developed several sub-questions. They also help guide the research. The first one is about grounding the design in theory and case-based evidence and is as follows:

1) *What factors are needed to help communities of practice function effectively?*

This question needs to be answered first in order to lay the groundwork for the design of a system for organizing CoPs. The answer to this is found in chapter two, which might be considered the literature review. The next sub-question concerns the actual design of the system itself, including how it needs to be implemented. This question is:

2) *What does a theoretically effective system for organizing and implementing CoPs look like?*

The answer to this question is the system developed in chapter two. I call the system the Community of Practice Organizing System, or CoPOS. The next step considers how the CoPs organized by implementing the CoPOS can be tested to see if they in fact stimulate employee learning beneficial to the organization:

3) *How can CoPs be tested for effectiveness?*

The answer to this question is the research model and set of instruments, which can be found in chapter three. The next question is about the final design of the CoPOS and is as follows:

4) *What does a tested system for organizing communities of practice look like?*

This question is answered after the end of the empirical chapter (four). At that point, the CoPOS will have been implemented and tested in six different organizations.

The final research question is about the context in which the CoPOS was implemented. This is important to practitioners who are looking for prescriptive advice about when CoPs are effective. It is also important to science because it gives insight into factors that affect learning in organizations. This last question is:

5) *What contextual factors contribute to the effectiveness of CoPs?*

The answer to this question can be found in the cross-case analysis at the end of chapter four.
1.4 Scientific and Societal Relevance

Community of practice theory is relatively new and underdeveloped. Although there is a large amount of practitioner-focused literature on CoPs, there is little empirical work. In this sense the research makes a contribution to the general corpus of knowledge surrounding CoPs and further develops theory surrounding the concept. This research also contributes to the debate surrounding evaluations of human resource trajectories by theoretically and empirically linking communities of practice to organizational learning.

Furthermore, a review of the literature showed that there is little published about CoPs in higher (professional) education. There is some research being done here in the Netherlands by groups funded by institutions such as The Digital University, The SURF Foundation and other government-supported foundations, but this is still in the formative stage and not well known except within a small circle of researchers. There is a growing corpus of work on teacher communities in primary and secondary schools but most research about communities in higher education deals with communities of learners or knowledge building communities (such as those used by scientists to further their research), not with communities dealing with the profession of teaching.

The practical relevance of this research lies directly in the answer to the main research question. This is formulated as a set of design rules that can be used in order to guide the design of CoPs in polytechnics. At a more abstract level, this research should add to the quality of higher professional education by contributing to the instruments available for organizational development and HRD consultants. Further practical relevance can be found in the contribution to practitioner knowledge surrounding the design and implementation of organizational interventions, especially in polytechnics. This contribution is an improvement of techniques for the organization of CoPs in both the private and public sectors.

1.5 Research Approach

The approach I use to answer the research questions is based on what is known as design-based research (Andriessen, 2004; A. Brown, 1992; Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003; Collective, 2003; A. Collins, Joseph, & Bie-
In design-based research, existing theory, case-based evidence and knowledge from practice is used in order to come to a solution concept (van Aken, 2004) which can be used as a template in order to help solve a field problem. In the case of this research, the field problem considers stimulating organizational development through employee learning. The solution concept will be a set of design principles used for organizing CoPs. In a dialectic between theory and practice (Denyer et al., 2008; van Burg, Romme, Gilsing, & Reymen, 2008), knowledge is built around the context in which generative mechanisms (sometimes known as causal mechanisms) can be facilitated so the desired outcomes are reached (van Aken, 2004). I consider that a generative mechanism is “…a cause that affects outcomes in similar ways across diverse contexts” (Mahoney, 2003, p.4). But, because these causes are contingent (Pawson, 2002), knowledge must be developed about the conditions under which the mechanisms produce desired results, and just as importantly, when they do not. An example of this from the research is as follows: shared understanding is a generative mechanism for group learning. The goal is not to try and establish causality between shared understanding and collective learning, but to understand the conditions under which shared understanding is triggered in order to construct this context so that group learning can occur. In terms of social research, I am looking to explain what makes the ‘black box’ work during an intervention, not establish the link to an outcome of it.

The interventions that comprise the design for stimulating CoPs have been gathered from existing cases, especially those done in cooperation with the Digital University. Each one is grounded in both theory and case evidence from literature as well as case studies done during the research. The complete concept solution (a CoP) is tested using a quasi-experimental design (Cook & Campbell, 1979). Once the concept solution is tested, the results are studied and any possible improvements to the design are made. Then the cycle starts again. The cyclical process of design-based research is illustrated in Figure 1.2 (Andriessen, 2004; Gorard & Taylor, 2004).
Data collection, which is linked to evaluation, is done using mixed methods with an emphasis on a quantitative approach. Surveys are used in order to understand the learning effects participating in a community has on participants, while interviews and open questions on different surveys are employed to gain insight into the learning processes of participants and discover possible unforeseen results.

1.6 Structure of the Dissertation

This dissertation has two important aspects to it. The first important aspect is the designing of effective CoPs. The second important aspect of the dissertation concerns the implementation of the design and the evaluation of it. In order to do this, an evaluative framework was developed and the design tested in a number of case studies.

The research process of this dissertation is based loosely on the model shown in Figure 1.2. In this chapter one finds a description of the problem that this research concerns and specific questions that will be answered during the course of it. In chapter two I develop the design of the CoP. Chapter three is a presentation of the evaluative framework and instrumentation. These chapters are a result of a synthesized a literature review that used case-based evidence and knowledge from practice. The three questions I wanted to answer were basically the first three research sub-questions as well as a description of what CoPs actually are.
Chapter four contains a presentation of results from testing of the system, which took place in six different organizations. Each of the implementations is presented as a case study and looks at the context in which the CoPs were organized, an evaluation of the implementation, a look at the outcomes of the tests and a discussion thereof. The chapter ends with an analysis of the aggregated results and a cross-case analysis. In chapter five I present the conclusions to the research. This is followed by a discussion of the results and on the entire research process, in chapter six. Summaries in English and in Dutch, and appendices follow.